

Appln. No.: 10/634,607

RECEIVED  
CENTRAL FAX CENTER

JAN 17 2007

**AMENDMENTS TO THE CLAIMS:**

1. (Currently Amended) An electrode for an electrochemical cell, comprising:  
an electrode material including an active material having a proton-conducting  
compound and a nitrogen-containing heterocyclic compound;

wherein the nitrogen-containing heterocyclic compound is one or more  
compounds selected from the group consisting of imidazole, triazole, pyrazole, and their  
derivatives; and

wherein said electrode comprises 1 to 80 parts by weight of the nitrogen-  
containing heterocyclic compound to 100 parts by weight of the active material.

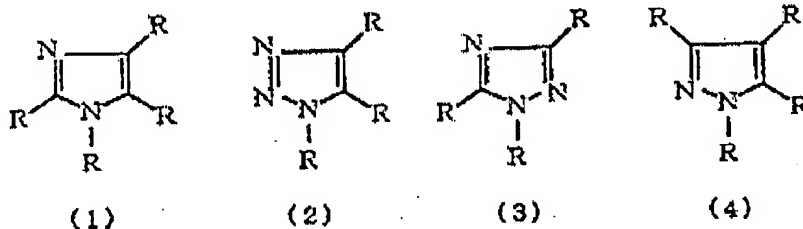
2. (Currently Amended) The cell electrode as claimed in Claim 1 wherein the  
electrode material comprises [[a]] the nitrogen-containing heterocyclic compound and a  
polymer having a unit containing a nitrogen-containing heterocyclic moiety.

3. (Currently Amended) The cell electrode as claimed in Claim 1, used [[for]] in  
an electrochemical cell including another electrode and wherein only protons act as a  
charge carrier in a redox reaction in both electrodes associated with charge and discharge.

4. (Currently Amended) The cell electrode as claimed in Claim 1, wherein the  
nitrogen-containing heterocyclic compound further comprises one or both more of  
benzimidazole and its derivatives.

Appln. No.: 10/634,607

5. (Previously Presented) The cell electrode as claimed in Claim 1, wherein the nitrogen-containing heterocyclic compound is one or more compounds selected from the group consisting of imidazole or its derivative represented by formula (1), triazole or its derivative represented by formula (2) or (3), and pyrazole or its derivative represented by formula (4):



wherein R independently represent hydrogen, alkyl having 1 to 4 carbon atoms, amino, carboxyl, nitro, phenyl, vinyl, halogen, acyl, cyano, trifluoromethyl, alkylsulfonyl or trifluoromethylthio.

6-7. (Canceled)

8. (Original) The cell electrode as claimed in Claim 1 comprising 1 to 80 parts by weight of the nitrogen-containing heterocyclic compound to 100 parts by weight of the active material.

9. (Canceled)

**Appln. No.: 10/634,607**

**10. (Original)** The cell electrode as claimed in Claim 2 comprising 1 to 80 parts by weight of the nitrogen-containing heterocyclic compound and the polymer to 100 parts by weight of the active material.

**11. (Currently Amended)** An electrochemical cell having a positive electrode including a proton-conducting compound and a negative electrode including a proton-conducting compound, wherein at least one of the electrodes is the electrode as claimed in Claim 1 ~~and both electrodes comprise a proton-conducting compound as an active material~~.

**12. (Original)** An electrochemical cell as claimed in Claim 11 comprising an electrolyte containing a proton source wherein only protons act as a charge carrier in a redox reaction in both electrodes associated with charge and discharge.

**13. (Original)** A secondary battery comprising the electrochemical cell as claimed in Claim 11.

**14-16. (Canceled)**

**17. (Currently Amended)** An electrochemical cell having a positive electrode including a proton-conducting compound and a negative electrode including a proton-conducting compound, wherein at least one of the electrodes is the electrode as claimed in Claim 4 ~~and both electrodes comprise a proton-conducting compound as an active material~~.

Appln. No.: 10/634,607

18. (Previously Presented) The electrochemical cell as claimed in claim 17 comprising an electrolyte containing a proton source wherein only protons act as a charge carrier in a redox reaction in both electrodes associated with charge and discharge.

19. (Currently Amended) A secondary battery comprising an electrochemical cell having at least two electrodes:

wherein at least two of the electrodes of the electrochemical cell comprise an electrode material including an active material having a proton-conducting compound;

wherein at least one ~~of the~~ electrodes of the electrochemical cell comprises an electrode material including a nitrogen-containing heterocyclic compound; [[and]]

wherein the nitrogen-containing heterocyclic compound comprises one or more compounds selected from the group consisting of imidazole, triazole, pyrazole, and their derivatives; and

wherein said electrode material comprises the nitrogen-containing heterocyclic compound and a polymer having a unit containing a nitrogen-containing heterocyclic moiety.

20. (Currently Amended) An electrochemical cell having a positive electrode including a proton-conducting compound and a negative electrode including a proton-conducting compound, wherein at least one of the electrodes is the electrode as claimed

**Appln. No.: 10/634,607**

in Claim 5 and both electrodes comprise a proton-conducting compound as an active material.

**21. (Previously Presented)** The electrochemical cell as claimed in Claim 20 comprising an electrolyte containing a proton source wherein only protons act as a charge carrier in a redox reaction in both electrodes associated with charge and discharge.

**22. (Previously Presented)** The electrochemical cell as claimed in Claim 20, wherein the electrochemical cell is arranged in a secondary battery.

**23. (New)** An electrochemical cell, comprising:

a negative electrode including an active material having a proton-conducting compound and a nitrogen-containing heterocyclic compound, the negative electrode being formed on a negative current collector;

a positive electrode;

a separator separating the positive electrode and the negative electrode;

wherein the nitrogen-containing heterocyclic compound is one or more compounds selected from the group consisting of imidazole, triazole, pyrazole, and their derivatives; and

wherein the negative electrode comprises 1 to 80 parts by weight of the nitrogen-containing heterocyclic compound to 100 parts by weight of the active material.

**Appln. No.: 10/634,607**

**24. (New)** An electrochemical cell, comprising:

a positive electrode including an active material having a proton-conducting compound and a nitrogen-containing heterocyclic compound, the positive electrode being formed on a positive current collector;

a negative electrode;

a separator separating the positive electrode and the negative electrode;

wherein the nitrogen-containing heterocyclic compound is one or more compounds selected from the group consisting of imidazole, triazole, pyrazole, and their derivatives; and

wherein the positive electrode comprises 1 to 80 parts by weight of the nitrogen-containing heterocyclic compound to 100 parts by weight of the active material.

**25. (New)** An electrochemical cell, comprising:

an electrode material including an active material having a proton-conducting compound and a nitrogen-containing heterocyclic compound;

wherein only protons act as a charge carrier in a redox reaction in both electrodes associated with charge and discharge;

wherein the electrochemical cell comprises an electrolyte containing a proton source, and wherein only adsorption and desorption of protons in the electrode active material is involved in electron transfer in a redox reaction in both electrodes associated with charge and discharge;

wherein the nitrogen-containing heterocyclic compound is one or more compounds selected from the group consisting of imidazole, triazole, pyrazole, and their derivatives; and

**Appln. No.: 10/634,607**

wherein the electrode material comprises 1 to 80 parts by weight of the nitrogen-containing heterocyclic compound to 100 parts by weight of the active material.